

SUPPRESSION OF MILE-A-MINUTE AND JAPANESE STILTGRASS, AND NON-TARGET IMPACTS WITH PRE APPLICATIONS OF PENDIMETHALIN, IMAZAPIC, OR SULFOMETURON. A.E. Gover, Penn State Univ., Univ. Park, and R.K. Wagoner, PA Dept. of Conservation and Natural Resources, Harrisburg.

ABSTRACT

PRE applications of pendimethalin at 4.5 kg/ha, imazapic at 0.14 kg/ha, or sulfometuron at 0.053 kg/ha were applied March 10, 2009 to plots with residue removed at 187 L/ha, or residue intact at 187 or 935 L/ha. Herbicide-free plots were established with and without residue. Residue biomass was not measured, but comprised a layer approximately 2 cm thick composed primarily of previous year's Japanese stiltgrass (*Microstegium vimineum* (Trin.) A. Camus var. *imberbe* (Nees) Honda). Each plot was visually evaluated for percent total vegetative cover and percent cover by mile-a-minute (*Polygonum perfoliatum* L.) on May 5 (56 days after treatment [DAT]), June 9 (91 DAT), and July 22, 2009 (134 DAT), and percent cover from stiltgrass on July 22. Each treatment was replicated three times in a randomized complete block design. Evaluations of herbicide by residue and herbicide by carrier volume effects were conducted with separate analyses of variance on factorial subsets of the data.

There was no interaction between herbicide and residue, or herbicide and carrier volume for any dependent variable. The effect of residue or carrier volume was not significant for any dependent variable at any rating date. Mile-a-minute pressure was lower than anticipated, was observed at low levels in the experiment, but did not exceed 1 percent cover for any treatment by 134 DAT. Herbicide was a significant factor for total vegetative cover only when the untreated plots were included in the analysis. At 56 DAT, the untreated plots averaged 51 percent cover, while the pendimethalin, imazapic, and sulfometuron plots averaged 25, 19, and 12 percent cover respectively. At 134 DAT, the untreated plots had 100 percent cover, while the pendimethalin, imazapic, and sulfometuron plots averaged 71, 56, and 27 percent cover, respectively. Stiltgrass cover at 134 DAT was 91 percent for the untreated plots, 39 percent for imazapic (70 percent of total cover), and 1 and 3 percent for pendimethalin and sulfometuron.

Pendimethalin provided the best combination of stiltgrass suppression and release of non-target vegetation. The most common species observed in pendimethalin-treated plots included wild grape (*Vitis* spp.), goldenrods (*Solidago* spp.), poison-ivy (*Toxicodendron radicans* (L.) Kuntze), blackberry (*Rubus allegheniensis* Porter), arrowleaf tearthumb (*Polygonum sagittatum* L.), and common St. Johnswort (*Hypericum perforatum* L.). Sulfometuron-treated plots had a similar spectrum of woody species as pendimethalin-treated plots, but plant size and density was less, and apparent injury symptoms were observed, particularly on multiflora rose (*Rosa multiflora* Thunb. ex Murr.), and cover from herbaceous species was reduced. Pendimethalin currently provides the most selective means to suppress mile-a-minute and stiltgrass where a mixed community of residual vegetation is to be preserved.